REMARKS

This Amendment is in response to the Final Office Action mailed August 22, 2003. The Office Action rejected claims 2, 4, and 46-55 under 35 U.S.C. § 102 and § 103. Claim 2 has been amended and claims 56-58 have been added. Claims 2, 4, and 46-58 remain pending in the application. Reconsideration in light of the remarks and amendments made herein is respectfully requested.

Rejections Under 35 U.S.C. § 102

The Office Action rejected claims 2, 4, 47-50, and 52-55 under 35 U.S.C. § 102(e) as being anticipated by Hirakawa et al. ("Hirakawa") (U.S. Pat. No. 6,097,358).

Regarding independent claim 2, the Office Action asserts that Hirakawa teaches the limitation "when the plurality of sub-fields are arranged in ascending order of luminance weight with a luminance weight of an "i"th sub-field being denoted by Wi, the plurality of subfields are given such luminance weights that "n" exists where $W_1 + W_1 + W_2 + ... + W_i ... + W_n < W_{n+1}$".

To more clearly claim that which Applicant considers a novel aspect of the invention, claim 2 has been amended to recite "where $1 \leq n$ and $n+1 \leq$ the number of the plurality of sub-fields." Applicant submits that such a limitation cannot be found in Hirakawa.

The Office Action refers to Figure 3 and Column 8, lines 1-20 and lines 60-67 of Hirakawa as teaching that "n" exists where $W_1 + W_1 + W_2 + ... + W_i ... + W_n < W_{n+1}$.

The example of Fig. 3 shows luminance weights of 1, 1, 1, 1, 1, 6, 6, 6, 6, 6, 36, 36, 36, 36, 36. With these luminance weights, the claimed inequality expression "$W_1 + W_1 + W_2 + ... + W_i ... + W_n < W_{n+1}$" cannot be satisfied for any n (i.e., where $1 \leq n \leq 16$). It is clear from column 8, lines 14-17 that these luminance weights do not satisfy the inequality expression "<", because the equality sign "=" is used instead of the inequality sign "<". In particular, Hirakawa notes that "the respective weights of luminance are integer multiples of the minimum weight "1" and equal

to one plus the total sum of the weights smaller than themselves." (Column 8, lines 14-17) To clarify this, Hirakawa notes that "6=1x5+1 and 36=1x5+6x5+1".

Hirakawa has a conventional plasma display panel construction that satisfies an equality "=" relationship between luminance weights. The present invention, on the other hand, has a novel construction that satisfies an inequality relationship between luminance weights $(W_1+W_1+W_2+...+W_i...+W_n<W_{n+1})$.

Unlike the equality relationship of Hirakawa, the claimed inequality relationship permits the dynamic range of luminance to be widened without having to increase the number of sub-fields. To more explicitly claim this aspect of the invention, Applicant has added new clam 56, which recites " the luminance weights of the plurality of sub-fields are dynamically adjusted to [1] increase the ratio between the minimum to maximum luminance reproducible on the image apparatus when the gray level is relatively high, and [2] decrease the ratio between the minimum to maximum luminance reproducible on the image apparatus when the gray level is relatively low." Such dynamic adjustment of luminance weights based on the range of luminance of a particular image is not taught by Hirakawa.

Although the Examiner points to Hirakawa (Col. 7, lines 55-67 and Col. 8, lines 1-40) as teaching such dynamic adjustment of the luminance weights, Applicant submits that Hirakawa only teaches that the "luminance weights of the sub-fields may suitably be selected." (Col. 8, lines 25-26). None of the cited teachings of Hirakawa teach or suggest how or if the luminance weights of the sub-fields may be dynamically adjusted depending on the luminance range of the input image signal.

Regarding independent Claim 4, the Office Action asserts that Hirakawa teaches "a gray-scale image for the TV field period is displayed by choosing one of a plurality of coding patterns which are each made up of a combination of sub-fields have predetermined luminance weights in accordance with a maximum gray level of an input image signal and illuminating each pixel during desired sub-fields using the chosen coding pattern." Applicant submits that this limitation cannot be found in Hirakawa.

Hirakawa discloses a device to (a) realize stable operation for producing gradation display regardless of gradation levels to be reproduced and (b) increase the number of sub-fields and thereby increase the number of gradation levels to display without raising power consumption for addressing.

Unlike the claimed invention, Hirakawa does not choose one of a plurality of coding patterns, each having predetermined luminance weights, in **accordance with a maximum gray level of an input image**. That is, Hirakawa **does not** select between two or more coding patterns **depending on the gray level luminance range of the input image**. The sub-fields taught by Hirakawa (1, 1, 1, 1, 1, 6, 6, 6, 6, 6, 36, 36, 36, 36, 36) are different in substance from the coding patterns of the present invention. These subfields in Hirakawa do not suggest pre-determined coding patterns that can be used to vary the luminance range of based on the maximum luminance of the input signal as claimed.

Additionally, Hirakawa does not have a construction in which "when a ratio of a sum of luminance weights of all sub-fields in a first coding pattern to a sum of luminance weights of all sub-fields in a second coding pattern is denoted by K where the first and second coding patterns are included in the plurality of coding patterns and the sub-fields in the first coding pattern are in a one-to-one correspondence with the sub-fields in the second coding pattern in order of luminance weight, the sub- fields in the first coding pattern include: (a) a sub-field having a luminance weight whose ratio to a luminance weight of a corresponding sub-field in the second coding pattern is no greater than K; and (b) a sub-field having a luminance weight whose ratio to a luminance weight of a corresponding sub-field in the second coding pattern is greater than K".

The present invention is characterized in that, in a construction where such a plurality of coding patterns are selectively used, the first coding pattern and the second coding pattern have a particular relationship. Hirakawa does not teach the claimed relationship between coding patterns.

Thus, the present invention has a substantially different construction from Hirakawa.

Regarding Claims 51-54, Hirakawa mentions it is desirable to avoid an extreme continuation of the light-emitting of non-light-emitting state with a view to preventing pseudo-

contour with moving pictures. (Col. 8, lines 33-43) However, Hirakawa does not provide any concept of dynamically controlling coding by choosing one of a plurality of coding patterns in accordance to the amount of movement in images. Hirakawa does not have a plurality of coding patterns, and does not teach or suggest dynamically controlling coding luminance weights in accordance with an amount of movement in images as claimed.

As a result of the distinctions cited here, Applicant submits that independent claims 2, 4 and 55 of the present invention are patentably distinguishable over Hirakawa. Applicant submits that all dependent claims are also in condition of allowance as a consequence of their dependence on independent claims 2, 4, or 55. Withdrawal of the 102(e) rejection of claims 2, 4, 47-50, and 52-55 is respectfully requested.

Rejection Under 35 U.S.C. § 103

The Office Action rejected claims 46 and 51 under 35 U.S.C. §103(a) as being unpatentable over Hirakawa et al. ("Hirakawa") (U.S. Pat. No. 6,097,358).

Applicant respectfully disagrees that Hirakawa teaches or suggests the claimed subject matter. For the reasons discussed above, Applicant submits that Hirakawa fails to teach or suggest the coding patterns as claimed. Additionally, as a result of their dependence on independent claim 4, claims 46 and 51 are also in condition of allowance.
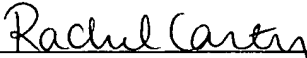
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CONCLUSION

In view of the amendments and remarks made above, it is respectfully submitted that the pending claims are in condition for allowance, and such action is respectfully solicited. Authorization is hereby given to charge our Deposit Account No. 19-2814 for any charges that may be due. Furthermore, if an extension is required, then Applicant hereby requests such an extension.

Respectfully submitted,

I hereby certify that this document is being deposited on January 22, 2004, with the U.S. Postal Service as first class mail under 37 C.F.R. §1.8 and is addressed to Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450.

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